

THURSDAY, NOVEMBER 14, 1907.

A NEW HANDBOOK OF INORGANIC CHEMISTRY.

Handbuch der anorganischen Chemie. Herausgegeben von Dr. R. Abegg. Band ii., Abt. ii. Pp. ix+700. Price 24 marks. Band iii., Abt. i. Pp. x+466. Price 17 marks. Abt. iii. Pp. xiv+876. Price 24 marks. (Leipzig : R. Hirzel, 1905-7.)

A HEARTY welcome may be extended to this valuable work of reference, which does for inorganic chemistry much more than Beilstein's famous handbook has done for organic chemistry. It is no mere guide to the recognition and characterisation of the compounds with which it deals. Its aim is beyond this, and its scope is more general. In a word, the editor endeavours to make use of the vast accumulation of physico-chemical data of the past twenty years, and to incorporate them in the descriptive portion of the work, exercising a critical selection of the material employed and giving at the same time due consideration to theoretical connections and outstanding problems. The periodic system has been adopted as the basis of classification, and the portions of the work already issued deal with the elements of the second, third, and fifth periodic groups respectively. Here it may not be out of place to protest against an aggravating instance of the Teutonic passion for subdivision. The work is to be issued in eight separately paged and indexed volumes, dealing with the eight periodic groups, together with a ninth volume of a general character. One might, therefore, reasonably expect that the numbers of the volumes would correspond to the group numbers of the elements described. Instead of this, we find the elements of the fifth group described in vol. iii., section iii., those of the fourth group presumably in vol. iii., section ii., and so on. Whether the elements of group 6 will be found in vol. iii. section iv., or in vol. iv., section i., remains for the present a subject of agreeable speculation.

Prof. Abegg, in carrying out his scheme, has secured the collaboration of many eminent workers in the domains of inorganic and physical chemistry. Amongst those who contribute to the volumes before us we may mention Marckwald (radium), R. J. Meyer (rare earths), Schenck (phosphorus subgroup), Brauner (atomic weights), and Rohland (technological subjects, e.g. mortar, ultramarine).

The account of the metals of the rare earths and their compounds deserves special mention. The subject is introduced by a general section of nearly fifty pages, in which we are presented with a historical survey, an account of the mode of occurrence and general chemical characteristics of the group, an outline of the methods of extraction and separation of the earths, and a discussion of the valency and atomic weights of the elements. Then follows in detail the subgroup of the cerite earths, with a special account of the separation and purification of lanthanum, pran-

seodymium, neodymium, and samarium. The second subgroup is that of the terbium elements, and the third deals with those of the erbium and yttrium families.

Another noteworthy feature of the work is the treatment of the atomic weights of all the elements by the same hand. Prof. Brauner has accomplished his task admirably. He takes Clarke's "Recalculation of the Atomic Weights" as the source of data up to 1896, and thereafter refers to the original papers, using the reports of the International Commission as a guide. Little is said of the older and less exact determinations, but the more modern work is given in considerable detail, and critically discussed in its relationship, not only to the atomic weight of the element directly concerned, but to that of other elements which may be involved in the actual experiments. To give an idea of the scale on which Prof. Brauner has written, it may be stated that the atomic weight of beryllium occupies five and a half pages, and that of nitrogen no less than thirty-two pages. The author freely criticises the tables of the International Commission in the course of his articles, pointing out, for example, that if $N=14.01$ is correct, which he believes to be the case, then Ag cannot be 107.93 as given in the international table, but must lie between 107.88 and 107.89.

Prof. Abegg's "Handbuch" is admirably printed and got up, and must in future form an indispensable item in every properly equipped chemical library.

ITALIAN BIRDS AND NEOGENESIS.

Avifauna Italica. By Enrico Hillyer Giglioli. Secondo resoconto. Pp. xxiv+784. (Firenze : Coi. Tipi dello Stab. Tipografico s. Giuseppe, 1907.)

ITALIAN ornithologists in particular, and students of palaeartic birds in general, will be grateful to Prof. Giglioli for this revised edition of his most valuable work. Herein he now recognises 496 species, as entitled to the rank of Italian birds; but this includes species which have only once been obtained within this area, and at least two which many ornithologists will refuse to regard as species at all.

These two exceptions are of more than passing interest, inasmuch as Prof. Giglioli contends that they furnish good examples of "neogenesis": of the birth of new species *per saltum*.

The first of these two cases is that of a redstart obtained by Prof. Giglioli from Sardinia. On data which can only be described as unsatisfactory, the author elects to create a new species—*Ruticilla nigra*—though most of us, on the same evidence, would agree that the examples on which this new species was based were but melanistic specimens of *Ruticilla titys*, the common black redstart. This view he rejects, contending that his own hypothesis is the more reasonable.

Far more importance is to be attached to the second case, which Prof. Giglioli describes at some length, not only in the pages of this work, but also in the

Ibis, 1903. Briefly, this concerns an owl which the author then described as a new species—*Athene chiaradia*; in the volume now before us it is accorded still the rank of a species. Though it is scarcely to be expected that ornithologists will recognise this bird as entitled to specific rank, the history which Prof. Giglioli gives of its discovery will never lose its interest.

Within the space at our disposal, it would be impossible to tell the whole story of this most remarkable case. Suffice it to say that the bird upon which Prof. Giglioli founded his new species was a nestling taken from a nest at Pizzocco, in the province of Udine. Though obviously nearly related to the little owl (*Athene noctua*), it differed therefrom, among other things, in having a dark brown instead of a golden-yellow iris—a rather remarkable fact. Naturally, the author at once instituted a search for further examples from this neighbourhood, and two years later this search was rewarded by the discovery of a nest—in close proximity to that from which the original specimen was obtained—containing four nestlings. One of these, be it noted, was a typical *Athene chiaradiae*, while the remaining nestlings were as typically examples of the little owl (*Athene noctua*)! Two other nests containing both dark and yellow-eyed young were later found, and finally a nest with both types of young, together with the parents, was taken. Though these parents were undoubtedly "little owls," they were both somewhat abnormal specimens, both in the matter of size and coloration.

It is to be deplored that no attempt whatever was made to induce any of these birds to breed in confinement; or that the parents were not allowed their freedom in the hope that they might at least go on perpetuating these strange aberrations. Instead, every single bird was killed to furnish specimens for the natural history museum at Florence. Thereby some extremely valuable facts were lost to science for ever! Had Prof. Giglioli endeavoured to breed these birds in confinement, he might have succeeded in establishing his hypothesis of "neogenesis." As it is, both this and the two new species which he finds thereon must be put back to await further evidence.

Though in some matters we may not agree with Prof. Giglioli, we have said enough, perhaps, to show that his book is by no means a dull catalogue of the birds of Italy.

W. P. P.

PHYSIOLOGY OF ALIMENTATION.

The Physiology of Alimentation. By Prof. Martin H. Fischer. Pp. viii+348. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1907.) Price 8s. 6d. net.

THIS is a small but comprehensive account of modern physiological ideas concerning the important subjects of digestion and absorption. The work of physiologists on these questions has of recent years been both laborious and fruitful. Pawlow has devised new methods of examining the secretions and

the course of their action on the food-stuffs. The epoch-making work of Emil Fischer has thrown new light on their composition, especially in the case of the proteins. The doctrine that enzymes are catalytic agents has taken firm root. The importance of the chemical stimuli to secretion (secretin and other hormones) has been demonstrated by Starling and Bayliss. The sequence of events in the journey along the alimentary tube has been accurately followed by Cannon's shadow photographs. All these points, and many others, are clearly treated by Prof. Martin Fischer in the very useful little book he has published.

The introduction of new names for the enzymes so long familiar as pepsin, trypsin, rennet, and the like, will, it is to be feared, introduce confusion to the student's mind, although the new nomenclature aims at uniformity. It is interesting, no doubt, to see the actual shadow photographs which Cannon took, but they do not lend themselves well to reproduction, and more diagrammatic pictures would have been instructive.

In a few cases the information given is not up-to-date, or is open to question. For instance, Pawlow's results on the stimulation of the nerves of the pancreas require revision in the light of the discovery of secretin. These results are given in full, and a few pages later Starling's discovery of the pancreatic hormone is described, but no attempt is made to correlate the two, nor is any guidance given to the reader in estimating their relative value.

Again, Weinland's ideas on the "adaptation" of the pancreas are quoted with apparent approval, and the confirmation of his views is wrongly attributed to Vernon. No mention, however, is made of the important work of Plimmer, who has conclusively shown that Weinland's results rest on imperfect methods, and that in the cases investigated no adaptation is discoverable.

The distinction between casein and caseinogen is mentioned, but the former is stated to be produced from the latter by the addition of acid, as well as by the action of caseinase or rennet. This view is justifiable if, as some have recently asserted, the difference between the two proteins is one of state of aggregation only, and not a true chemical difference. But before adopting such a view it is necessary to dispose of all the work which tends in the opposite direction, and to explain how it is the two substances differ in elementary composition.

Prof. Fischer assigns the place of protein synthesis in the body mainly to the absorptive epithelium of the intestine, and quotes Abderhalden as holding the same view. No mention, however, is made of the work of others (e.g. Leathes, Howell, and Schryver), which appears to prove that there is no such special seat of synthesis in the wall of the alimentary tract. There are just a few points where adverse criticism appears to be necessary; there always will be differences of opinion between those who interpret the facts of life. Taken as a whole, the book is not only lucid, but correct and instructive.

W. D. H.